

AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

1-108 (cancelled).

109 (new). A **synthetic membrane anchor** or **synthetic molecule construct** of the structure F-S₁-S₂-L where:

- F is selected from the group consisting of carbohydrates;
- S₁-S₂ is a spacer linking F to L; and
- L is a lipid selected from the group consisting of diacyl- and dialkyl-glycerolipids, including glycerophospholipids, and sphingosine derived diacyl- and dialkyl-lipids, including ceramide.

110 (new). The synthetic membrane anchor or synthetic molecule construct according to claim 109 where L is a lipid selected from the group consisting of diacyl- and dialkyl-glycerolipids, including glycerophospholipids.

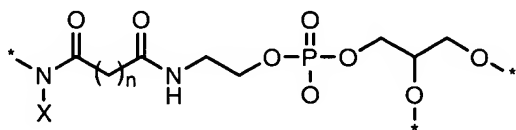
111 (new). The synthetic membrane anchor or synthetic molecule construct according to claim 109 where L is selected from the group consisting of: diacylglycerolipids, phosphatidate, phosphatidyl choline, phosphatidyl ethanolamine, phosphatidyl serine, phosphatidyl inositol, phosphatidyl glycerol, and diphosphatidyl glycerol derived from one or more of trans-3-hexadecenoic acid, cis-5-hexadecenoic acid, cis-7-hexadecenoic acid, cis-9-hexadecenoic acid, cis-6-octadecenoic acid, cis-9-octadecenoic acid, trans-9-octadecenoic acid, trans-11-octadecenoic acid, cis-11-

octadecenoic acid, cis-11-eicosenoic acid or cis-13-docsenoic acid.

112 (new). The synthetic membrane anchor or synthetic molecule construct according to claim 111 where the lipid is derived from one or more cis-destaured fatty acids.

113 (new). The synthetic membrane anchor or synthetic molecule construct according to claim 112 where L is selected from the group consisting of: 1,2-O-dioleoyl-sn-glycero-3-phosphatidylethanolamine (DOPE), 1,2-O-distearyl-sn-glycero-3-phosphatidylethanolamine (DSPE) and rac-1,2-dioleoylglycerol (DOG).

114 (new). The synthetic membrane anchor or synthetic molecule construct according to claim 109 where L is a glycerophospholipid and the synthetic molecule construct includes the substructure:



where $n = 3$ to 5 , X is H or C , and $*$ is other than H .

115 (new). The synthetic membrane anchor or synthetic molecule construct according to claim 114 where n is 3 .

116 (new). The synthetic membrane anchor or synthetic molecule construct according to claim 109 where F, S₁, S₂ and L are covalently linked.

117 (new). The synthetic membrane anchor or synthetic molecule construct according to claim 109 where F is selected from the group consisting of naturally occurring or synthetic glycotopes.

118 (new). The synthetic membrane anchor or synthetic molecule construct according to claim 109 where F is a naturally occurring or synthetic glycotope consisting of three (trisaccharide) or more sugar units.

119 (new). The synthetic membrane anchor or synthetic molecule construct according to claim 109 where F is a glycotope selected from the group consisting of lacto-neo-tetraosyl, lactotetraosyl, lacto-nor-hexaosyl, lacto-iso-octaosyl, globoteraosyl, globo-neo-tetraosyl, globopentaosyl, gangliotetraosyl, gangliotriaosyl, gangliopentaosyl, isoglobotriaosyl, isoglobotetraosyl, mucotriaosyl and mucotetraosyl series of oligosaccharides.

120 (new). The synthetic membrane anchor or synthetic molecule construct according to claim 109 where F is selected from the group of glycotopes comprising the terminal sugars GalNAc α 1-3(Fuc α 1-2)Gal β ; Gal α 1-3Gal β ; Gal β ; Gal α 1-3(Fuc α 1-2)Gal β ; NeuAc α 2-3Gal β ; NeuAc α 2-6Gal β ; Fuc α 1-2Gal β ; Gal β 1-4GlcNAc β 1-6(Gal β 1-4GlcNAc β 1-3)Gal β ; Fuc α 1-2Gal β 1-4GlcNAc β 1-6(Fuc α 1-2Gal β 1-4GlcNAc β 1-3)Gal β ;

Fuc α 1-2Gal β 1-4GlcNAc β 1-6(NeuAc α 2-3Gal β 1-4GlcNAc β 1-3)Gal β ; NeuAc α 2-3Gal β 1-4GlcNAc β 1-6(NeuAc α 2-3Gal β 1-4GlcNAc β 1-3)Gal β ; Gal α 1-4Gal β 1-4Glc; GalNAc β 1-3Gal α 1-4Gal β 1-4Glc; GalNAc α 1-3GalNAc β 1-3Gal α 1-4Gal β 1-4Glc; or GalNAc β 1-3GalNAc β 1-3Gal α 1-4Gal β 1-4Glc.

121 (new). The synthetic membrane anchor or synthetic molecule construct according to claim 109 where when F is a glycotope, L is a glycerophospholipid and S2 is selected from the group including: -CO(CH₂)₃CO-, -CO(CH₂)₄CO- (adipate), -CO(CH₂)₅CO-, and -CO(CH₂)₅NHCO(CH₂)₅CO-.

122 (new). The synthetic membrane anchor or synthetic molecule construct according to claim 109 where S₁ is a C₃₋₅-aminoalkyl selected from the group consisting of: 3-aminopropyl, 4-aminobutyl, or 5-aminopentyl.

123 (new). The synthetic membrane anchor or synthetic molecule construct according to claim 122 where S₁ is 3-aminopropyl.

124 (new). The synthetic membrane anchor or synthetic molecule construct according to claim 109 where F mediates a cell-cell or cell-surface interaction.

125 (new). The synthetic membrane anchor or synthetic molecule construct according to claim 124 where F is carbohydrate with an affinity for a component expressed on a targeted cell or surface.

126 (new). The synthetic membrane anchor or synthetic molecule construct according to claim 125 where F has an affinity for a component expressed on epithelial cells or extra-cellular matrices.

127 (new). The synthetic membrane anchor or synthetic molecule construct according to claim 126 where F has an affinity for a component expressed on the epithelial cells or the extra-cellular matrix of the endometrium.

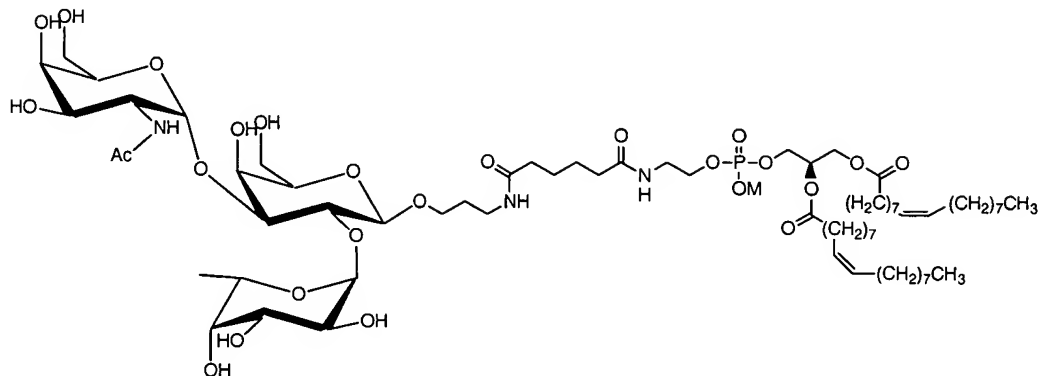
128 (new). The synthetic membrane anchor or synthetic molecule construct according to claim 127 where the component expressed on the epithelial cells or the extra-cellular matrix of the endometrium can be a naturally expressed component or an exogenously incorporated component.

129 (new). The synthetic membrane anchor or synthetic molecule construct according to claim 109 where F mediates a cell-solute interaction.

130 (new). The synthetic membrane anchor or synthetic molecule construct according to claim 129 where F is a ligand for a binding molecule where the presence of the binding molecule is diagnostic for a pathological condition.

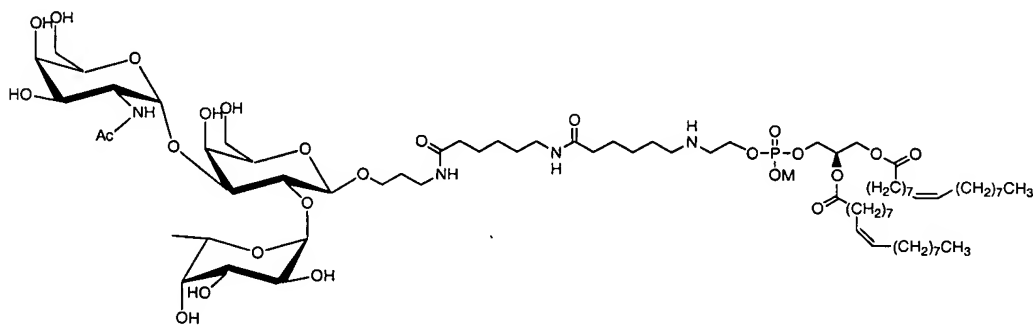
131 (new). The synthetic membrane anchor or synthetic molecule construct according to claim 130 where F is a ligand for an antibody (immunoglobulin).

132 (new). A synthetic membrane anchor or synthetic molecule construct
of the structure:



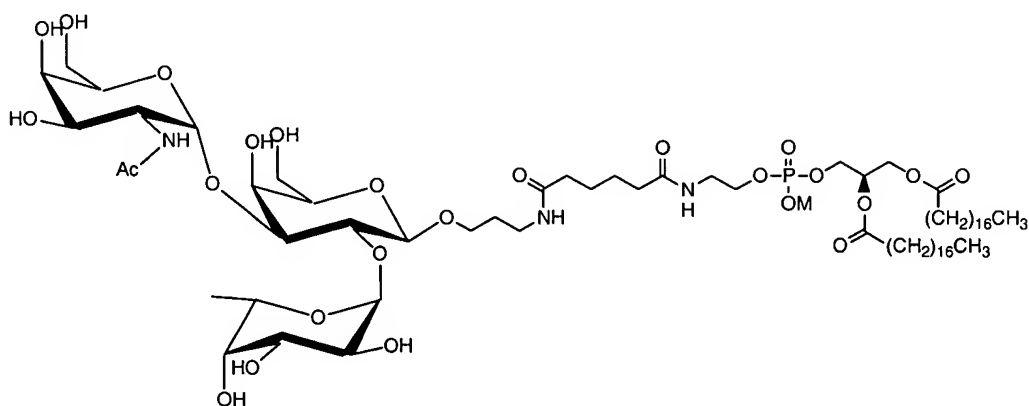
designated Atri-sp-Ad-DOPE (I) and M is typically H, but may be replaced by
another monovalent cation such as Na⁺, K⁺ or NH₄⁺.

133 (new). A synthetic membrane anchor or synthetic molecule construct
of the structure:



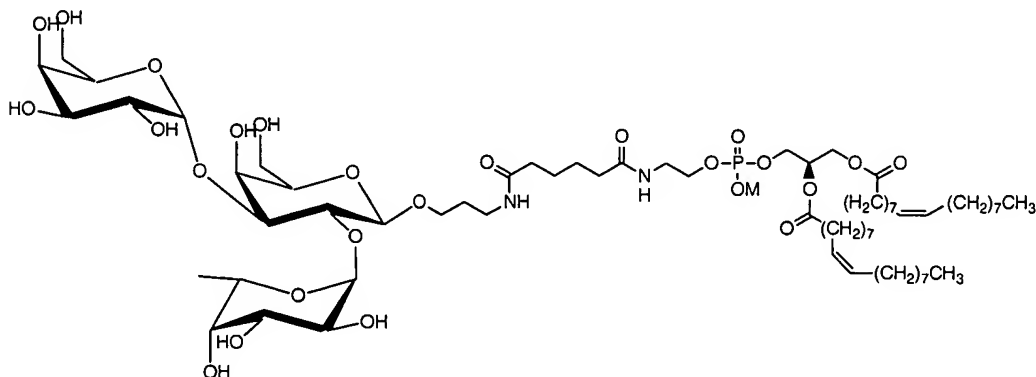
designated A_{tri}-spsp₁-Ad-DOPE (II) and M is typically H, but may be replaced by another monovalent cation such as Na⁺, K⁺ or NH₄⁺.

134 (new). A **synthetic membrane anchor or synthetic molecule construct** of the structure:



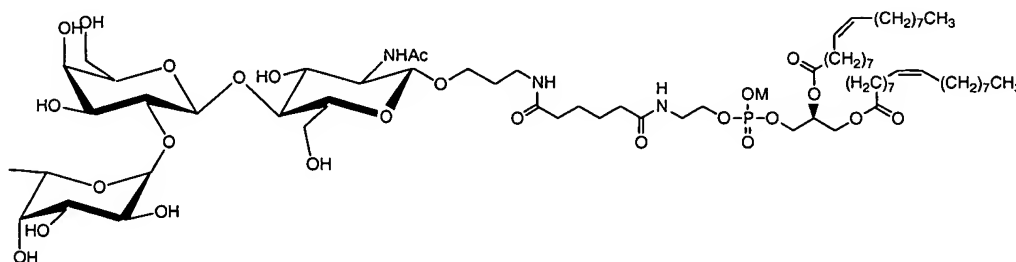
designated A_{tri}-sp-Ad-DSPE (III) and M is typically H, but may be replaced by another monovalent cation such as Na⁺, K⁺ or NH₄⁺.

135 (new) A **synthetic membrane anchor or synthetic molecule construct** of the structure:



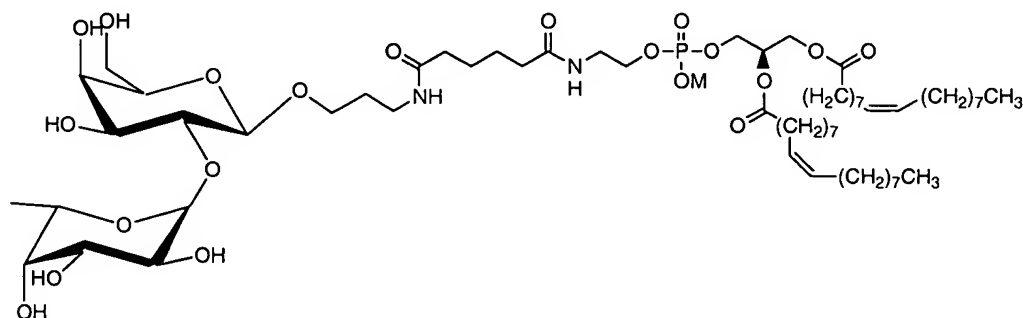
designated B_{tri}-sp-Ad-DOPE (VI) and M is typically H, but may be replaced by another monovalent cation such as Na⁺, K⁺ or NH₄⁺.

136 (new). A synthetic membrane anchor or synthetic molecule construct of the structure:



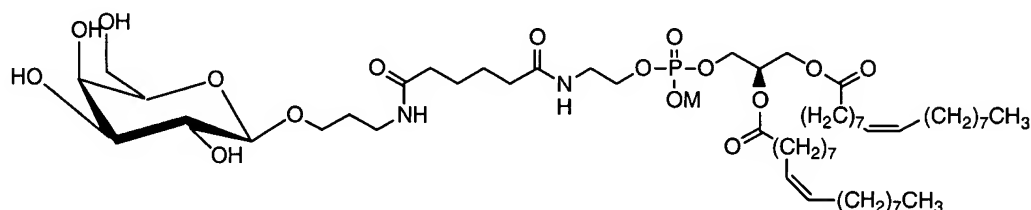
designated H_{tri}-sp-Ad-DOPE (VII) and M is typically H, but may be replaced by another monovalent cation such as Na⁺, K⁺ or NH₄⁺.

137 (new). A synthetic membrane anchor or synthetic molecule construct of the structure:



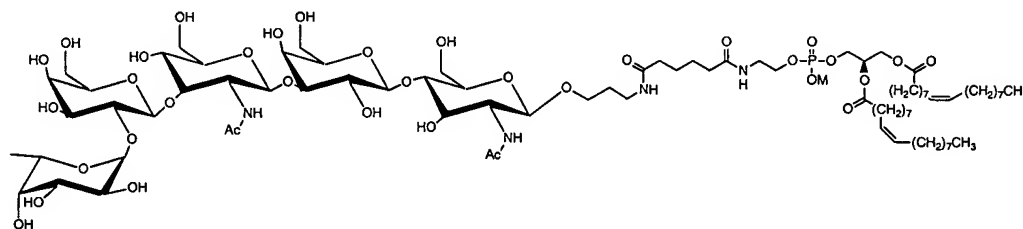
designated H_{di}-sp-Ad-DOPE (VIII) and M is typically H, but may be replaced by another monovalent cation such as Na⁺, K⁺ or NH₄⁺.

138 (new). A synthetic membrane anchor or synthetic molecule construct of the structure:



designated Galβi-sp-Ad-DOPE (IX) and M is typically H, but may be replaced by another monovalent cation such as Na⁺, K⁺ or NH₄⁺.

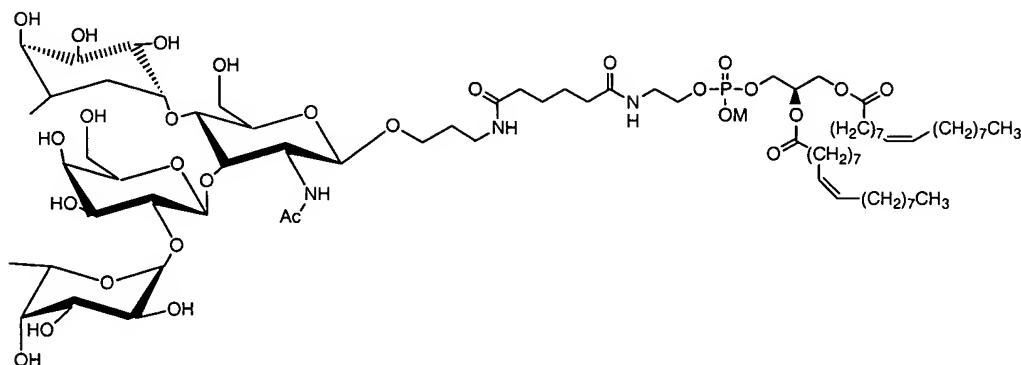
139 (new). A synthetic membrane anchor or synthetic molecule construct of the structure:



designated Fucα1-2Galβ1-3GlcNAcβ1-3Galβ1-4GlcNAc-sp-Ad-DOPE (XII) and M is typically H, but may be replaced by another monovalent cation such

as Na^+ , K^+ or NH_4^+ .

140 (new). A **synthetic membrane anchor** or **synthetic molecule construct** of the structure:



designated $\text{Fu}\alpha 1\text{-}2\text{Gal}\beta 1\text{-}3(\text{Fu}\alpha 1\text{-}4)\text{GlcNAc-sp-Ad-DOPE}$ (XIII) and M is typically H, but may be replaced by another monovalent cation such as Na^+ , K^+ or NH_4^+ .

141 (new). A **method** of effecting qualitative and/or quantitative changes in the surface antigens expressed by a cell or multi-cellular structure including the step:

- Contacting a suspension of the cell or multi-cellular structure with a water soluble synthetic membrane anchor or synthetic molecule construct of the structure $\text{F-S}_1\text{-S}_2\text{-L}$ for a time and at a temperature sufficient to effect the qualitative and/or quantitative change in the surface antigens expressed by the cell or multi-cellular structure;

where:

F is selected from the group consisting of carbohydrates,

S₁-S₂ is a spacer linking F to L; and

L is a lipid selected from the group consisting of diacyl- and dialkyl-glycerolipids, including glycerophospholipids, and sphingosine derived diacyl- and dialkyl-lipids, including ceramide.

142 (new). The method according to claim 141 where the cell or multi-cellular structure is of human or murine origin.

143 (new). The method according to claim 141 where the concentration of the water soluble synthetic membrane anchor or synthetic molecule construct in the suspension is in the range 0.1 to 10 mg/mL.

144 (new). The method according to 141 where the suspension of the cell or multi-cellular structure is contacted with the water soluble synthetic membrane anchor or synthetic molecule construct at a temperature in the range 2 to 37 °C.

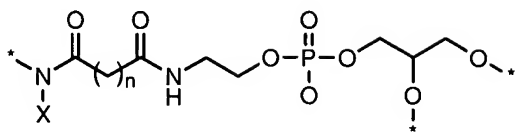
145 (new). The method according to claim 144 where the suspension of the cell or multi-cellular structure is contacted with the solution of the water soluble synthetic membrane anchor or synthetic molecule construct at a temperature in the range 2 to 25 °C.

146 (new). The method according claim 145 where the suspension of the cell or multi-cellular structure is contacted with the solution of the water soluble synthetic membrane anchor or synthetic molecule construct at a temperature in the range 2 to 4 °C.

147 (new). The method according to claim 141 where F is selected from the group of glycotopes comprising the terminal sugars GalNAc α 1-3(Fuc α 1-2)Gal β ; Gal α 1-3Gal β ; Gal β ; Gal α 1-3(Fuc α 1-2)Gal β ; NeuAc α 2-3Gal β ; NeuAc α 2-6Gal β ; Fuc α 1-2Gal β ; Gal β 1-4GlcNAc β 1-6(Gal β 1-4GlcNAc β 1-3)Gal β ; Fuc α 1-2Gal β 1-4GlcNAc β 1-6(Fuc α 1-2Gal β 1-4GlcNAc β 1-3)Gal β ; Fuc α 1-2Gal β 1-4GlcNAc β 1-6(NeuAc α 2-3Gal β 1-4GlcNAc β 1-3)Gal β ; NeuAc α 2-3Gal β 1-4GlcNAc β 1-6(NeuAc α 2-3Gal β 1-4GlcNAc β 1-3)Gal β ; Gal α 1-4Gal β 1-4Glc; GalNAc β 1-3Gal α 1-4Gal β 1-4Glc; GalNAc α 1-3GalNAc β 1-3Gal α 1-4Gal β 1-4Glc; or GalNAc β 1-3GalNAc β 1-3Gal α 1-4Gal β 1-4Glc.

148 (new). The method according to claim 147 where F is selected from the group of glycotopes consisting of the oligosaccharides GalNAc α 1-3(Fuc α 1-2)Gal β and Gal α 1-3(Fuc α 1-2)Gal β .

149 (new). The method according to claim 141 where L is a glycerophospholipid and the synthetic membrane anchor or synthetic molecule construct includes the substructure:



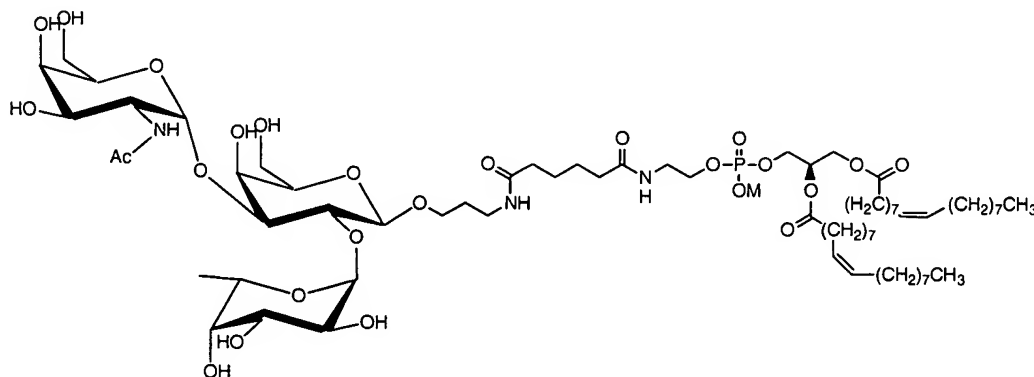
where $n = 3$ to 5 , X is H or C , and $*$ is other than H .

150 (new). The method according to claim 149 where when F is a glycotope, L is a glycerophospholipid and S_2 is selected from the group including: $-\text{CO}(\text{CH}_2)_3\text{CO}-$, $-\text{CO}(\text{CH}_2)_4\text{CO}-$ (adipate), $-\text{CO}(\text{CH}_2)_5\text{CO}-$, and $-\text{CO}(\text{CH}_2)_5\text{NHCO}(\text{CH}_2)_5\text{CO}-$.

151 (new). The method according to claim 150 where S_1 is a C_{3-5} -aminoalkyl selected from the group consisting of: 3-aminopropyl, 4-aminobutyl, or 5-aminopentyl.

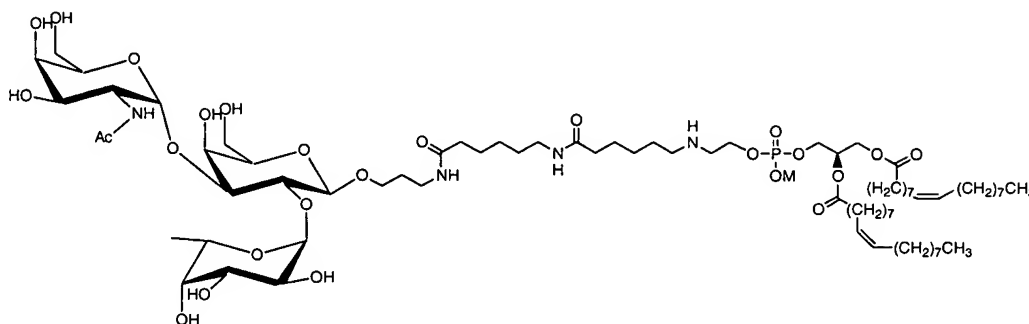
152 (new). The method according to claim 151 where S_1 is 3-aminopropyl.

153 (new). The method according to claim 141 where the synthetic membrane anchor or synthetic molecule construct is:



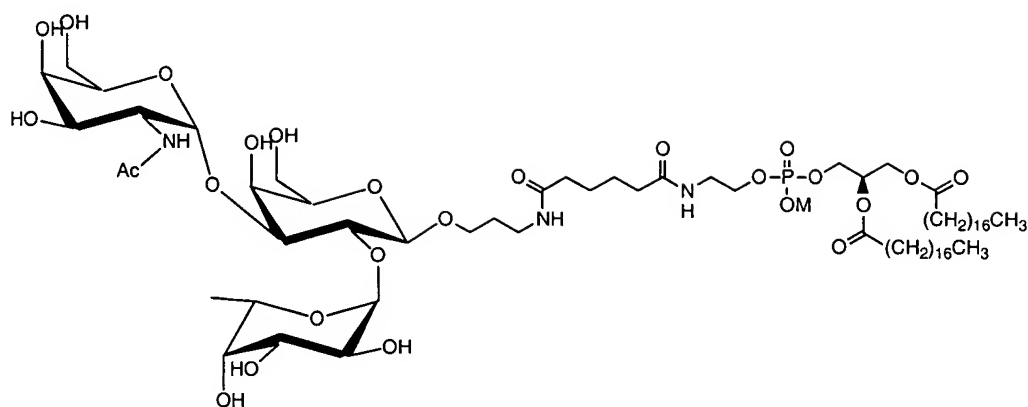
designated A_{tri}-sp-Ad-DOPE (I) and M is typically H, but may be replaced by another monovalent cation such as Na⁺, K⁺ or NH₄⁺.

154 (new). The method according to claim 141 where the synthetic membrane anchor or synthetic molecule construct is:



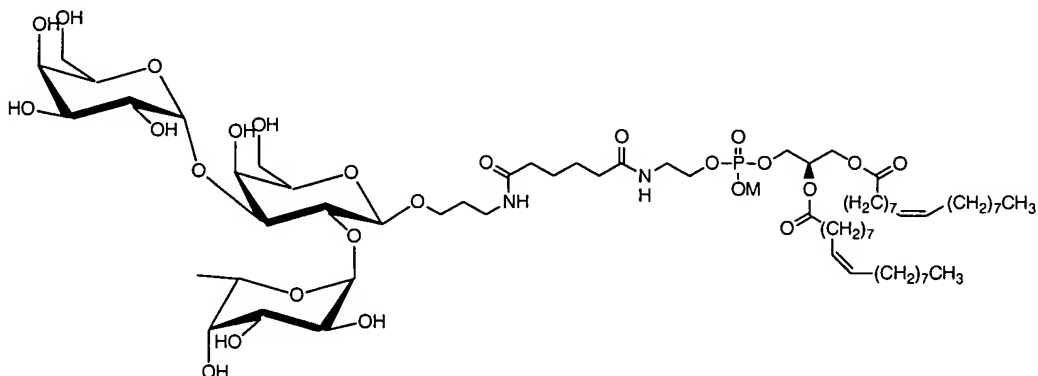
designated A_{tri}-spsp₁-Ad-DOPE (II) and M is typically H, but may be replaced by another monovalent cation such as Na⁺, K⁺ or NH₄⁺.

155 (new). The method according to claim 141 where the synthetic membrane anchor or synthetic molecule construct is:



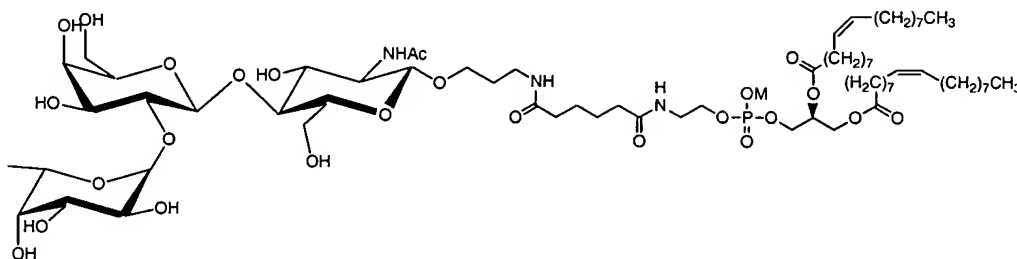
designated A_{tri}-sp-Ad-DSPE (III) and M is typically H, but may be replaced by another monovalent cation such as Na⁺, K⁺ or NH₄⁺.

156 (new). The method according to claim 141 where the synthetic membrane anchor or synthetic molecule construct is:



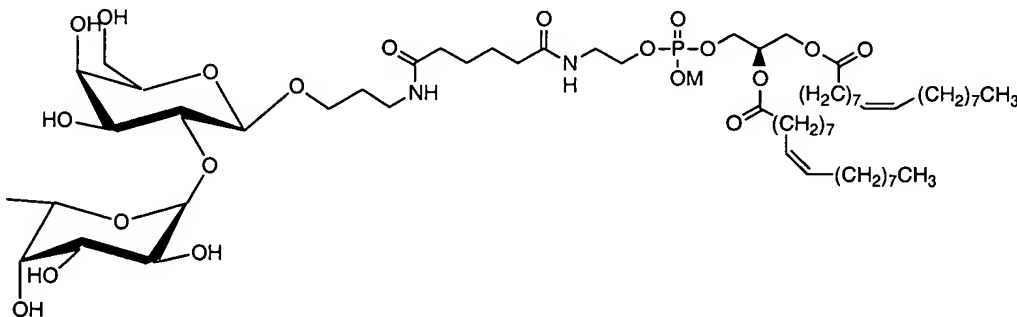
designated B_{tri}-sp-Ad-DOPE (VI) and M is typically H, but may be replaced by another monovalent cation such as Na⁺, K⁺ or NH₄⁺.

157 (new). The method according to claim 141 where the synthetic membrane anchor or synthetic molecule construct is:



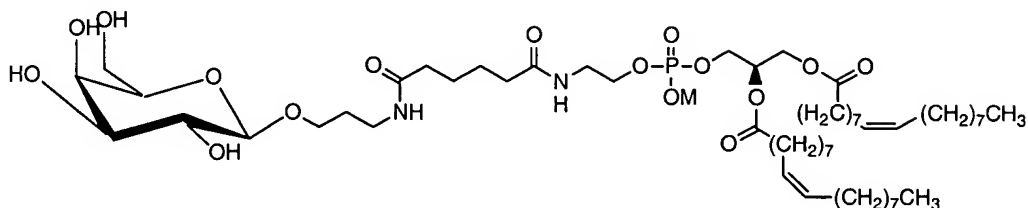
designated H_{tri}-sp-Ad-DOPE (VII) and M is typically H, but may be replaced by another monovalent cation such as Na⁺, K⁺ or NH₄⁺.

158 (new). The method according to claim 141 where the synthetic membrane anchor or synthetic molecule construct is:



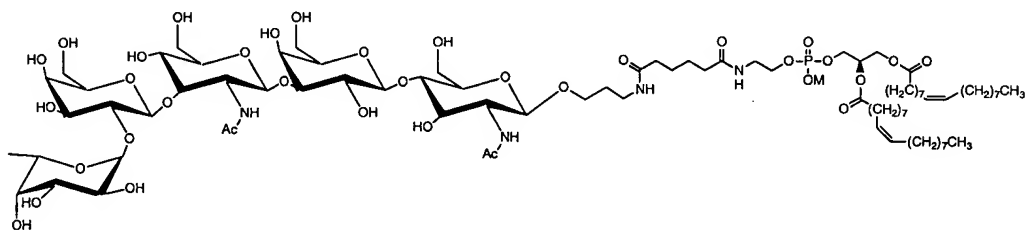
designated H_{di}-sp-Ad-DOPE (VIII) and M is typically H, but may be replaced by another monovalent cation such as Na⁺, K⁺ or NH₄⁺.

159 (new). The method according to claim 141 where the synthetic membrane anchor or synthetic molecule construct is:



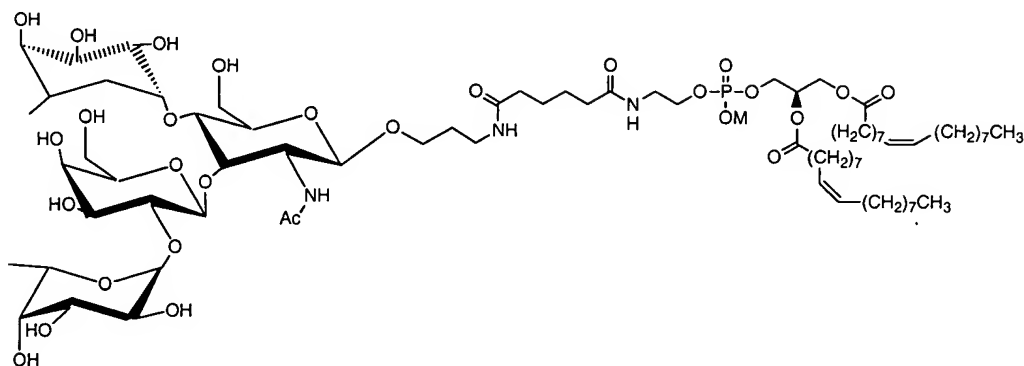
designated Galβi-sp-Ad-DOPE (IX) and M is typically H, but may be replaced by another monovalent cation such as Na⁺, K⁺ or NH₄⁺.

160 (new). The method according to claim 141 where the synthetic membrane anchor or synthetic molecule construct is:



designated Fucα1-2Galβ1-3GlcNAcβ1-3Galβ1-4GlcNAc-sp-Ad-DOPE (XII) and M is typically H, but may be replaced by another monovalent cation such as Na⁺, K⁺ or NH₄⁺.

161 (new). The method according to claim 141 where the synthetic membrane anchor or synthetic molecule construct is:



designated $\text{Fuc}\alpha 1-2\text{Gal}\beta 1-3(\text{Fuc}\alpha 1-4)\text{GlcNAc-sp-Ad-DOPE}$ (XIII) and M is typically H, but may be replaced by another monovalent cation such as Na^+ , K^+ or NH_4^+ .

162 (new). The method according to claim 141 where the cell or multi-cellular structure is an embryo.

163 (new). The method according to claim 162 where F is an attachment molecule where the attachment molecule has an affinity for a component expressed on the epithelial cells or the extra-cellular matrix of the endometrium.

164 (new). The method according to claim 163 where the component expressed on the epithelial cells or the extra-cellular matrix of the endometrium can be a naturally expressed component or an exogenously incorporated component.

165 (new). The method according to claim 141 where the cell or multi-cellular structure is a red blood cell.

166 (new). The method according to claim 165 where F is a ligand for a binding molecule where the presence of the binding molecule is diagnostic for a pathological condition.

167 (new). The method according to claim 166 where F is a ligand for an antibody (immunoglobulin).